

Aerial view of section of road eroding.

## Report from the Duxbury Beach Reservation, Inc.

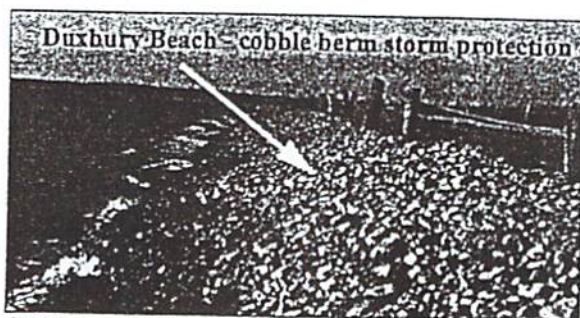
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Duxbury Beach Reservation, Inc.

The Duxbury Beach Reservation, Inc., the nonprofit steward and owner of Duxbury Beach, continues to apply successful, innovative practices in the preservation and management of the 4 1/2-mile long barrier beach. As a result of ongoing intense storms and sea level rise, the entire barrier is continuing to migrate landward, as it has for thousands of years. Not only is the ocean side eroding, but also the landward side facing Duxbury Bay. In fact, the bayside erosion of the barrier has accelerated in recent decades so that a two-foot vertical erosion scarp (drop-off) presently exists along certain sections of the hard-packed dirt road that runs along the backside of the beach.

Alternatives for mitigating the erosion along the back road are limited by strict environmental regulations. The Reservation selected and received approval from the Duxbury Conservation Commission for an innovative nonstructural cobble berm solution. The cobble berm is a moderately sloping ramp of cobble-sized stone (small, naturally round stones) placed up against the side of the road that is eroding. The beach in the location of the new cobble berm already consists of a mix of pebble and cobble, so the cobble berm is compatible with the existing environment.

Cobble berms work to prevent or slow erosion by allowing storm-wave uprush to quickly percolate through the large spaces between the individual stones, thereby preventing the stronger wave backwash from removing beach (and road) sediment with it as it returns to the sea. It is important to keep the spaces between the individual stones free of sand in order to allow maximum wave percolation. Research has shown that round-shaped rocks tend to move landward during severe wave action rather than being eroded seaward, the opposite of sand. Therefore, any round rocks that do move seaward should roll back, whereas jagged rocks will not.

The next time strong westerly winds blow waves from the land toward Duxbury Beach, watch the cobble berm perform its erosion prevention function – watch the storm-wave uprush rapidly disappear into the cobble berm before it reaches the road. This is arguably the best environmentally sensitive, innovative approach to protecting the back road from storm wave erosion.



Cobble berm in place.